INTER-REGIONAL
PARTNERSHIP
Alameda County
Contra Costa County
San Joaquin County
Santa Clara County
Stanislaus County

Date: **August 15, 2001**

To: **Inter-Regional Partnership Members**

From: **Staff**

RE: **GIS Applications and Demonstration**

Introduction

Geographic Information System (GIS) analysis is identified in the enabling IRP law as "…a crucial tool for use in determining the location of jobs housing opportunity zones." With this in mind, staff has worked to develop a GIS database and process that can be used to evaluate the Jobs/Housing Opportunity Zone applications. A recent staff-level workshop highlighted uses of GIS and clarified its role for the Partnership in Zone selection.

This report summarizes how Jobs/Housing Opportunity Zones might be evaluated and scored pursuant to IRP and state law intent. The system developed for review uses available data that can be described in map form and suggests a scoring system.

Discussion

Layers, Measures and Thresholds

Each layer of information to be used in the GIS analysis incorporates baseline data collected from the local jurisdictions, counties and the councils of governments (COGs). The data is built into a measurable and "map-able" layer, which can be applied in GIS form.

Measurements of each layer have been developed by reviewing the available data and determining how best to apply it. For example, a particular layer might measure jobs/housing relationship for a given area. A unit of measurement such as jobs/housing balance for each Transportation Analysis Zone (TAZ) is identified. The measure is used to compare each proposed Zone against the existing condition of the area in which it is proposed.

Once the layer and measurement device has been identified, a threshold is applied to each layer. Each threshold for each GIS layer is designated to determine whether a Zone meets the IRP intent. It sets a maximum or minimum requirement that each Zone must meet. For example, the jobs/housing balance for the area would be reviewed to see if the type of Zone (jobs or housing, or mixed use) is appropriate for the area in which it is proposed.

Opportunities for Use

Two opportunities to use the GIS capabilities developed for the IRP are described in the following discussion. These opportunities are:

- Use GIS mapping as a "preview" of the IRP study area (all five counties). The pre-view would show, in general terms, where Jobs/Housing Opportunity Zones might best be located.
- Use the GIS layers to evaluate and score each proposed Zone against a set of criteria identified by the Partnership and the State law as important in the selection of Zones.

Previewing -
The previewing tool and the evaluative layers are being developed based on concepts developed by the Partnership. The IRP has identified goals that promote housing near jobs, jobs near housing, and an improvement of the transportation relationships and opportunities between them.

The previewing exercise can be useful in reviewing the IRP study area as a whole. While Zones may be proposed anywhere in the study area, the previewing will help to show applicants and the Partnership what areas best reflect the goals and intent of jobs/housing balance.

Options for Scoring -
Three options for scoring proposed zones have been developed for Partnership review. These scoring options can be applied to the GIS layers, and could effectively be used to assign one-third of the total points possible for the Jobs/Housing Opportunity Zone application (50 of 150 points). The following bullets outline these options.

- Weight each GIS layer as to its relative importance in the Zone selection process. For example, the IRP may wish to assign proximity to transit a higher value than availability of infrastructure. Grouping layers into headings that reflect the IRP goals, and then weighting the groups allows the scoring to be guided by the goals.
- Each layer could be given equal weight, and the sum of the layers would determine the Zone's potential GIS score. In this instance, each layer could be valued. If the proposed Zone meets the layer threshold it would receive maximum points; if it did not meet the layer threshold, the proposed Zone would receive no points for that layer.
- Identify certain layers as “fatal flaw” thresholds, in similar fashion to the State law requiring a minimum and maximum Zone size. For example, the maximum distance of a population center from a proposed Jobs Zone could be identified as a strict criterion. If the proposed Zone is outside the maximum threshold, then the Zone is not eligible.

The attachments to this report show layers and associated thresholds and measures to be used in both the previewing and evaluation processes.

Requested Actions
1. Direct staff to use the previewing process, or evaluative scoring system, or both.
2. Direct staff to include the GIS scoring process in the application.

Attachment 1. Proposed GIS Spatial Modeling for Previewing Jobs/Housing Opportunity Zone Sites

Evaluative GIS Data Layes		
Category	**Measure**	**Points**
Zone Characteristics	General Plan	General Plan designations of "residential," "commercial" or "industrial" receive "3" points. All other general plan designations receive "0" points.
	Agriculture Land	Non-agriculture lands receive "3" points. All agriculture lands receive "0" points.
	Public Land	Non-public lands receive "3" points. All public lands receive "0" points.
	Brownfields	All Brownfield Tax Incentive Zones receive "3" points.
	FEMA Flood Zones	Non-flood zone areas receive "3" points. Areas within a flood zone receive "0" points.
	Wetland Areas	Non-wetland areas receive "3" points. Areas within a wetland receive "0" points.
	Slopes	Areas with less than 15 percent slope receive "3" points. Areas with slopes greater than 15 percent receive "0" points.
	Habitat	Areas with no endangered or threatened species habitat receive "3" points. Areas that contain endangered/threatened species habitat receive "0" points.
Jobs/Housing Imbalance & Impact	Jobs/Housing Ratio	The jobs/housing (j/h) ratio will be calculated for each TAZ by dividing year 2000 Total Jobs by year 2000 Employed Residents. A jobs/employed residents ratio of 1 indicates an existing jobs/housing balance. Those TAZs with a j/h ratio between 0 and .49 or greater than 1.5 receive "3" points. Those TAZs with a j/h ratio between .5 and .69 or 1.31 and 1.5 receive "2" points. TAZs with a j/h ratio between .7 and 1.3 receive "1" point. TAZs with a j/h ratio of one, receive "0" points.
Transportation/ Infrastructure	Multi-modal Transit Stations (distance from)	Locations within one-quarter mile of a multi-modal station receive "3" points. Locations between one quarter and one mile receive "2" points. Locations between one and three miles from a multi-modal station receive "1" point. Locations farther than three miles receive "0" points.
	Interchange (distance from)	Locations within one mile of an interchange receive "3" points. Locations between one and three miles receive "2" points. Locations between three and five miles from an interchange receive "1" point. Locations greater than five miles, receive "0" points.
	Roadways (AADTs)	Measure to be determined.
Urbanized Areas	Urbanized Area Boundaries	Locations within one mile of an urbanized area receive "3" points. Locations between one and three miles of an urbanized area receive "2" points. Locations between three and five miles from an urbanized area receive "1" point. Locations greater than five miles from an urbanized area receive "0" points.
	Population/Employment Density	Both population and employment density will be determined for each TAZ. Population density will be calculated by dividing year 2000 population by the acreage of the TAZ. Employment density will be calculated by dividing year 2000 Total Jobs by TAZ acreage. Once density is determined for each TAZ, the average TAZ density per county will be determined. For each county, those TAZs with a value equal to or greater than 120% of the average density receive "3" points. TAZs with a density value between 120% and 80% of the average density receive "2" points. TAZs with a density value between 80% and 50% of the average density receive "1" point. TAZs with a density value at less than 50% of the average, receive "0" points.

Attachment 2. Proposed GIS Spatial Modeling Process for Individual Site Evaluations

Evaluative GIS Data			
Category	**Measure**	**Point Allocation System**	**Maximum Points**
Zone Characteristics	General Plan, Agriculture, & Public Land	General Plan designations of "residential," "commercial" or "industrial" receive "1.67" points. All other general plan designations receive "0" points.	**10**
	Brownfields	All Brownfield Tax Incentive Zones receive "1.67" points.	
	FEMA Flood Zones	Non-flood zone areas receive "1.67" points. Areas within a flood zone receive "0" points.	
	Wetland Areas	Non-wetland areas receive "1.67" points. Areas within a wetland receive "0" points.	
	Slopes	Areas with less than 15 percent slope receive "1.67" points. Areas with slopes greater than 15 percent receive "0" points.	
	Habitat	Areas with no endangered or threatened species habitat receive "1.67" points. Areas that contain endangered/threatened species habitat receive "0" points.	
Jobs/Housing Imbalance & Impact	Jobs/Housing Ratio	The jobs/housing (j/h) ratio will be calculated for each TAZ by dividing year 2000 Total Jobs by year 2000 Employed Residents. A jobs/employed residents ratio of 1 indicates an existing jobs/housing balance. Those TAZs with a j/h ratio between 0 and .49 or greater than 1.5 receive "20" points. Those TAZs with a j/h ratio between .5 and .69 or 1.31 and 1.5 receive "10" points. TAZs with a j/h ratio between .7 and 1.3 receive "5" points. TAZs with a j/h ratio of one, receive "0" points.	**20**
Transportation/ Infrastructure	Multi-modal Transit Stations (distance from)	Locations within one-quarter mile of a multi-modal station receive "3.33" points. Locations between one quarter and one mile receive "2.15" points. Locations between one and three miles from a multi-modal station receive "1" point. Locations farther than three miles receive "0" points.	**10**
	Interchange (distance from)	Locations within one mile of an interchange receive "3.33" points. Locations between one and three miles receive "1.57" points. Locations between three and five miles from an interchange receive "1" point. Locations greater than five miles, receive "0" points.	
Urbanized Areas	Urbanized Area Boundaries	Locations within one mile of an urbanized area receive "5" points. Locations between one and three miles of an urbanized area receive "2.5" points. Locations between three and five miles from an urbanized area receive "1" point. Locations greater than five miles from an urbanized area receive "0" points.	**10**
	Population/Employment Density	Both population and employment density will be determined for each TAZ. Population density will be calculated by dividing year 2000 population by the acreage of the TAZ. Employment density will be calculated by dividing year 2000 Total Jobs by TAZ acreage. Once density is determined for each TAZ, the average TAZ density per county will be determined. For each county, those TAZs with a value equal to or greater than 120% of the average density receive "5" points. TAZs with a density value between 120% and 80% of the average density receive "2.5" points. TAZs with a density value between 80% and 50% of the average density receive "1" point. TAZs with a density value at less than 50% of the average, receive "0" points.	
Total Points Allowable:			**50 points**